Foodborne Diseases Active Surveillance Network (FoodNet)

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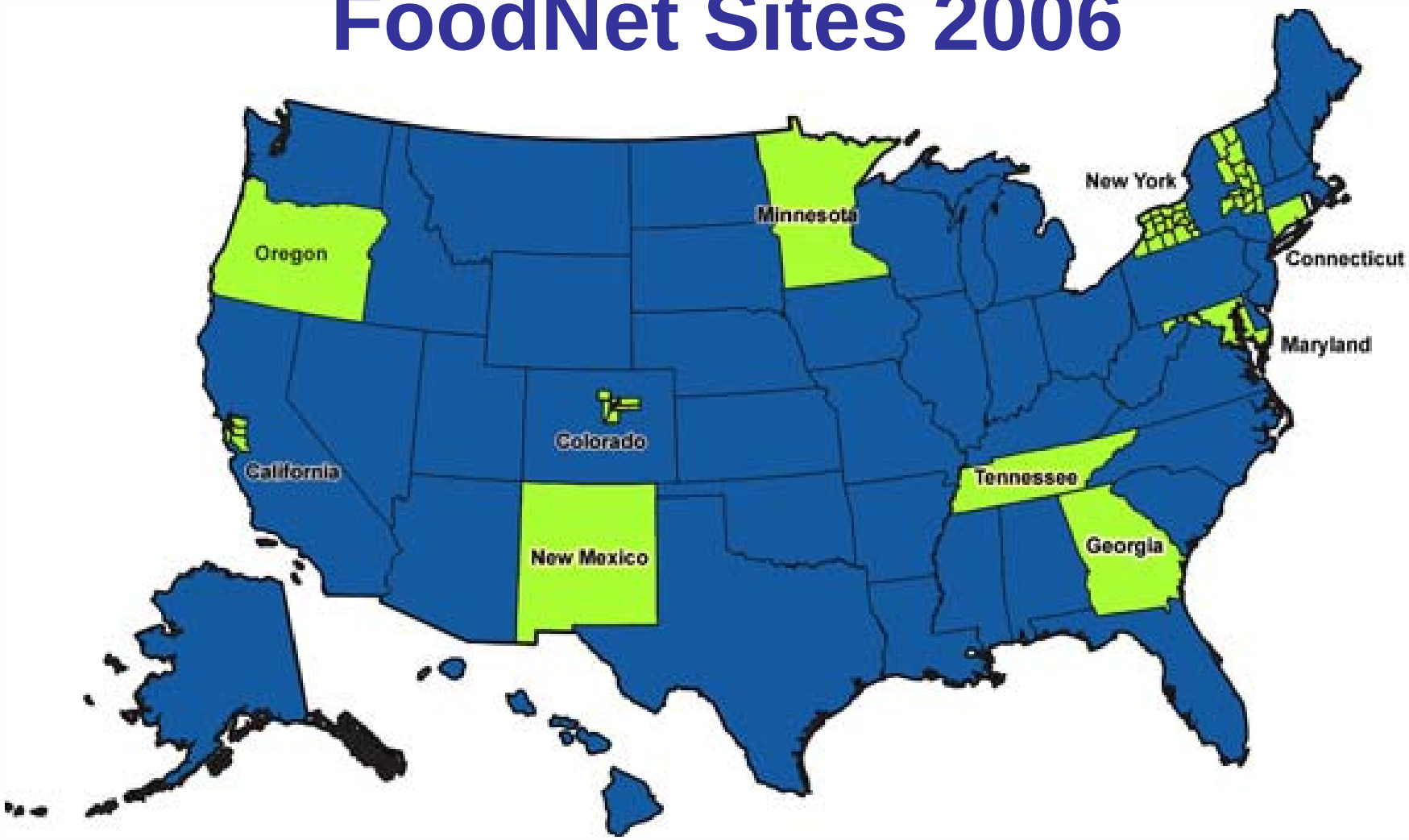
What is FoodNet?

- Foodborne Diseases Active Surveillance Network
- Established in 1996
- Principal foodborne disease component of Emerging Infections Program
- CDC, USDA-FSIS, FDA, and 10 participating state health departments

FoodNet Sites 2006



45 million (~15% of U.S. population)

FoodNet Objectives

1. **Determine the burden** of foodborne illness in the United States
2. **Monitor trends in the burden** of specific foodborne illness over time
3. **Attribute the burden** of foodborne illness to specific foods and settings
4. **Develop and assess interventions** to reduce the burden of foodborne illness

FoodNet Surveillance

- Active surveillance for laboratory-confirmed infections at >650 clinical laboratories
  - *Salmonella, Shigella, Campylobacter,* Shiga-toxin producing *E. coli*, *Listeria monocytogenes, Yersinia enterocolitica, Vibrio, Cryptosporidium* and *Cyclospora*
  - Since 2004, data on outbreak-associated infections
- Active surveillance for hemolytic uremic syndrome among pediatric nephrologists, with hospital discharge review

Monitoring trends over time

- Measuring change in incidence compared to 1996-1998 baseline
- Use negative binomial regression model to account for:
  - Increase in number of participating sites
  - Site-to-site variation in incidence

Summary of 2006 data

Declines:

- *Campylobacter*
- *Listeria*
- *Shigella*
- *Yersinia*

Little change:

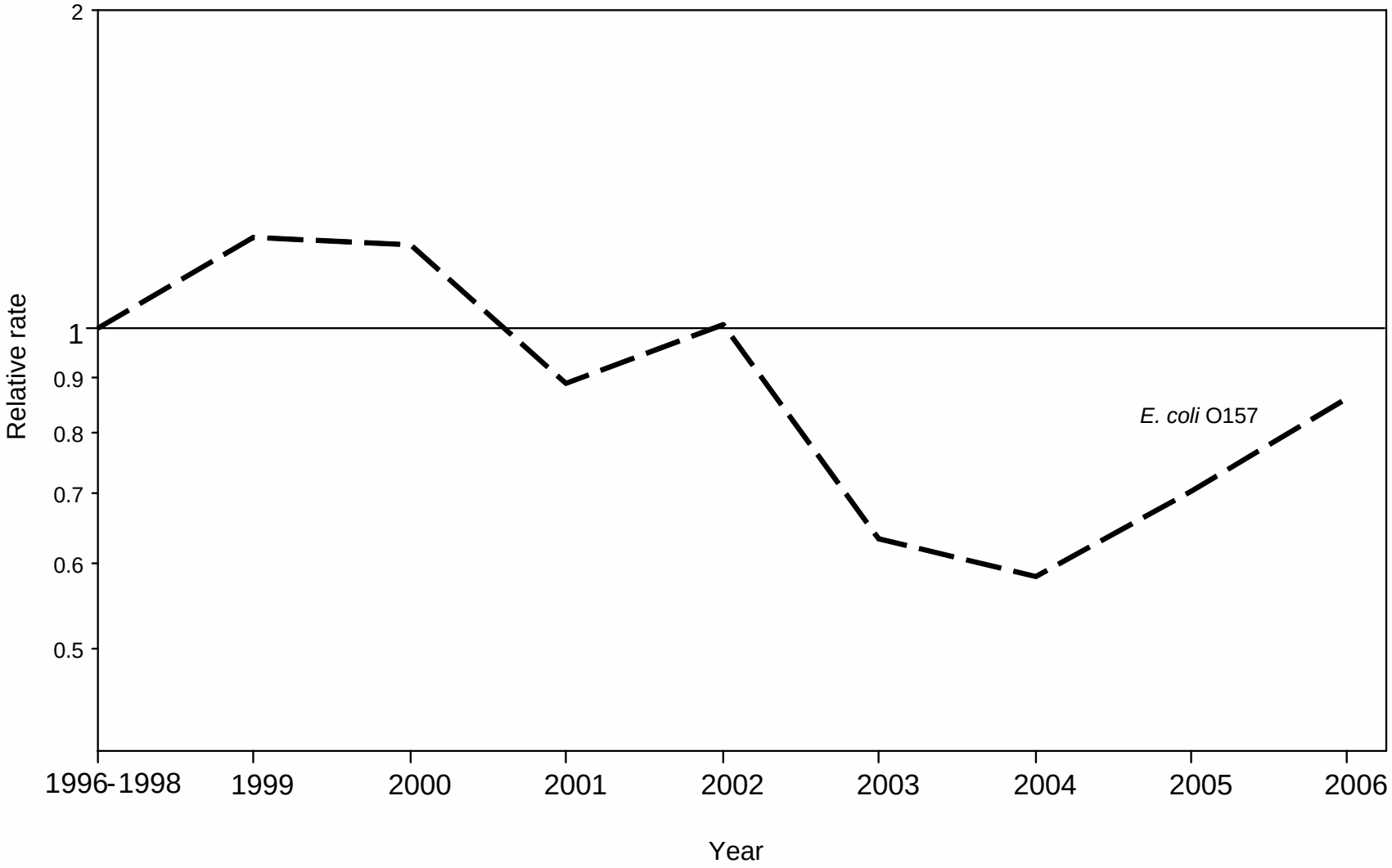
- *Salmonella*
- *E. coli* O157

Increase:

- *Vibrio*

Shiga toxin producing *Escherichia coli* O157

Relative rates compared with 1996—1998 baseline period of laboratory-diagnosed cases of infection with *E. coli* O157, by year



Trend in *E. coli* O157

- Decline in *E. coli* O157 infections 2003-2004, not sustained 2005-2006
  - Compared to 1996-1998 baseline, *E. coli* O157 not statistically significantly different in 2006
  - Decline 14% (95% CI: 5% increase to 30% decrease)
- Similar trend in FSIS data on *E. coli* O157 contamination of ground beef
  - Decline 2003-2004, stable 2004-2006

Healthy People 2010 Objectives

- Objective: 1.0 case/100,000 persons
  - **2004:** 0.90 cases/100,000 persons
  - **2005:** 1.05 cases/100,000 persons
  - **2006:** 1.31 cases/100,000 persons

Outbreak-Associated *E. coli* O157 Infections

Year	All *E. coli* O157	Outbreak-associated	Outbreak-associated (%)
2004	402	36	9
2005	473	107	23
2006	590	88	15

- Three large, produce-associated multistate outbreaks in 2006
  - Bagged fresh spinach
  - Lettuce in two fast-food chains

Salmonella

Relative rates compared with 1996—1998 baseline period of laboratory-diagnosed cases of infection with *Salmonella*, by year

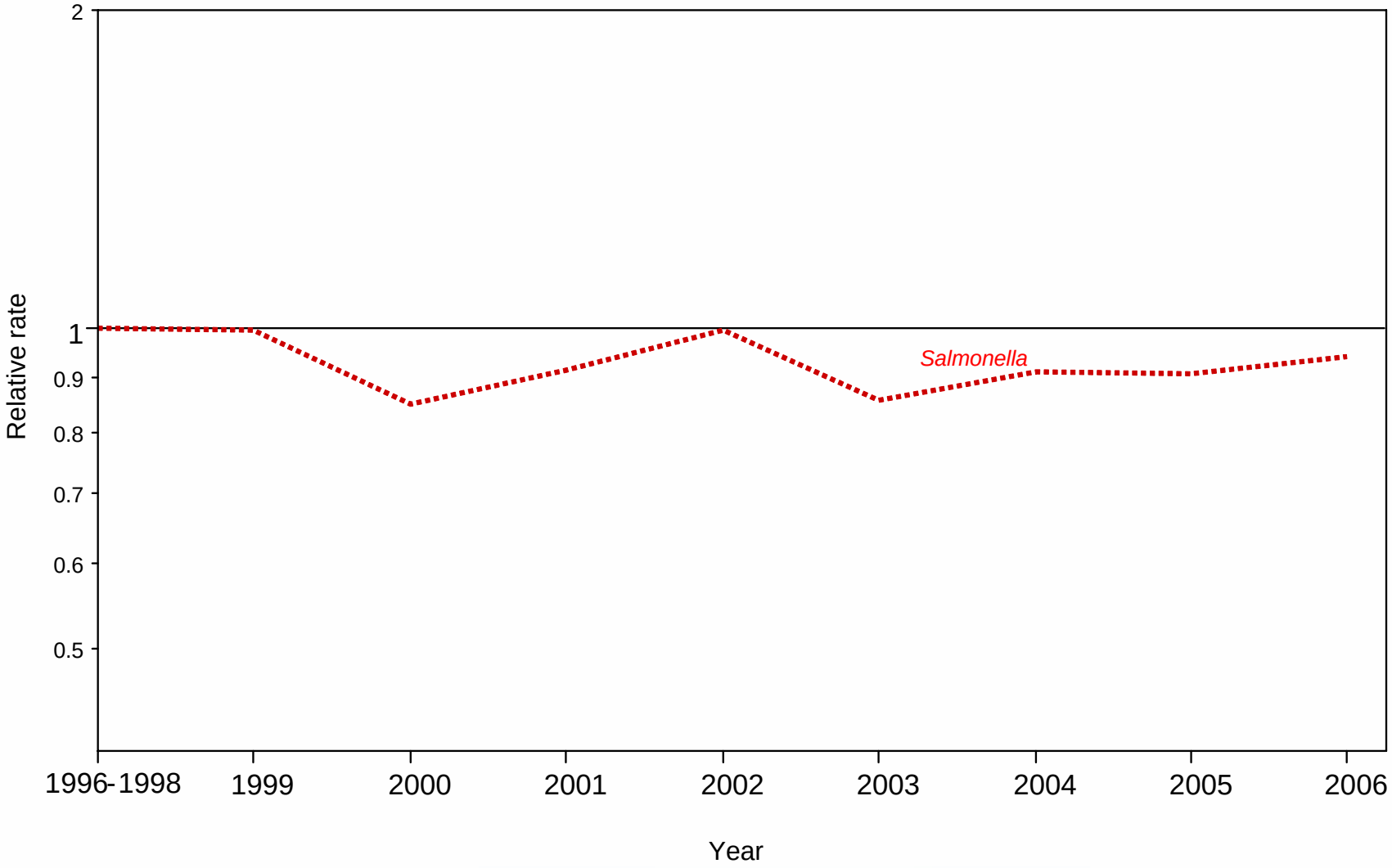
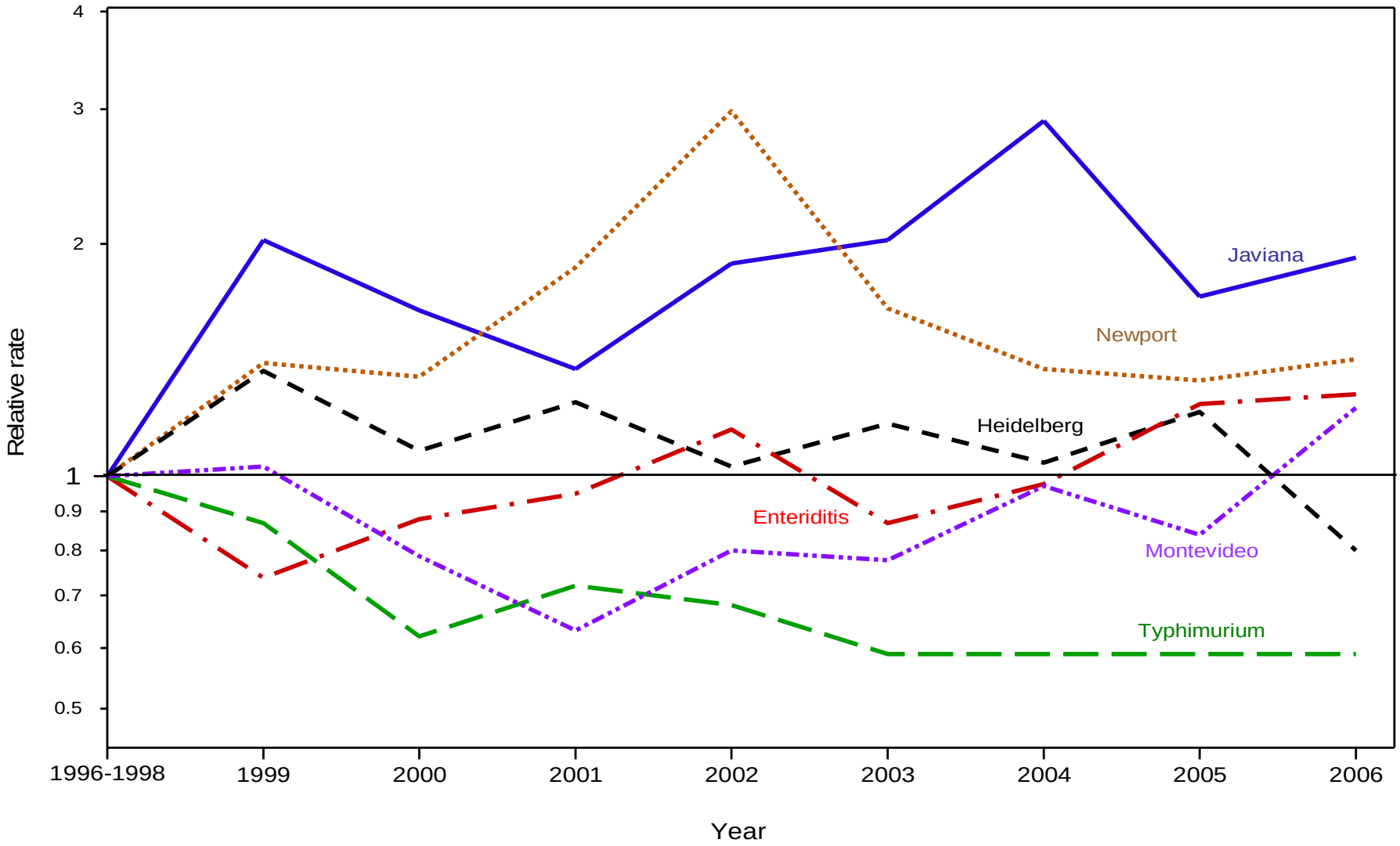


Figure 2. Relative rates compared with 1996–1998 baseline period of laboratory-diagnosed cases of infection with the six most commonly isolated *Salmonella* serotypes, by year



Trends in *Salmonella*

- Compared to 1996-1998 baseline, *Salmonella* not statistically significantly different in 2006
  - Only the incidence of *S*. Typhimurium decreased, and most of that decrease was prior to 2000
- FSIS data shows increase in frequency of *Salmonella* (particularly SE) in chicken-broiler carcasses from 2000-2005
  - 2006 FSIS initiative to reduce *Salmonella* in poultry and other meat

Healthy People 2010 Objectives

- **Objective:** 6.80 cases/100,000 persons
  - **2004:** 14.59 cases/100,000 persons
  - **2005:** 14.47 cases/100,000 persons
  - **2006:** 14.81 cases/100,000 persons

Outbreak-Associated *Salmonella* Infections

Year	All *Salmonella*	Outbreak-associated	Percentage outbreak-associated
2004	6,498	352	5.4
2005	6,505	296	4.6
2006	6,655	404	6.1

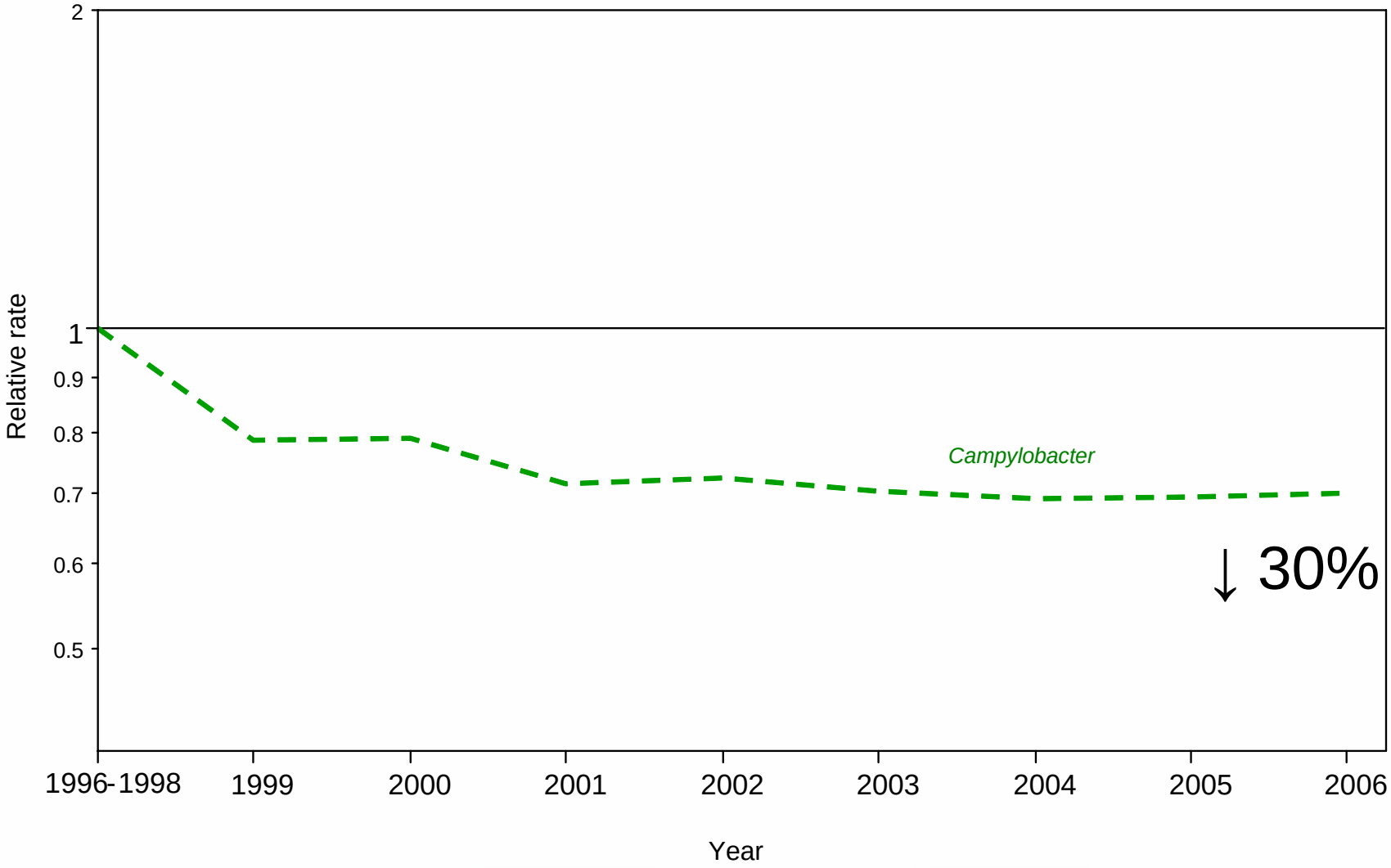
- Two large, tomato-associated multistate outbreaks in 2006
  - *S.* Newport
  - *S.* Typhimurium

Campylobacter

Listeria

Vibrio

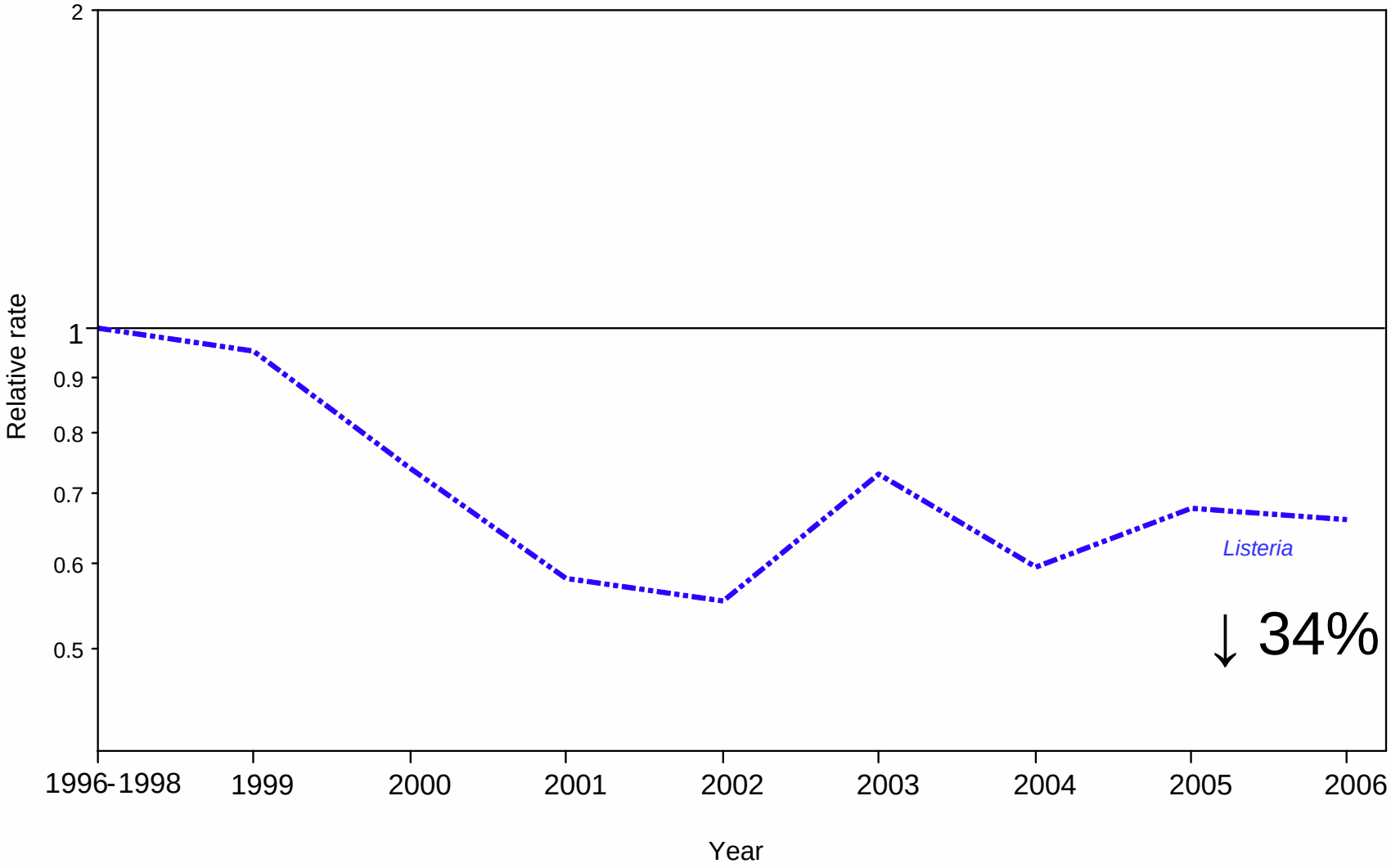
Relative rates compared with 1996—1998 baseline period of laboratory-diagnosed cases of infection with *Campylobacter*, by year



Trend in *Campylobacter*

- Decline in *Campylobacter* infections in 2006 similar to decline in 2005
- HP 2010 Objective: 12.30 cases/100,000 persons
  - **2006:** 12.71 cases/100,000 persons

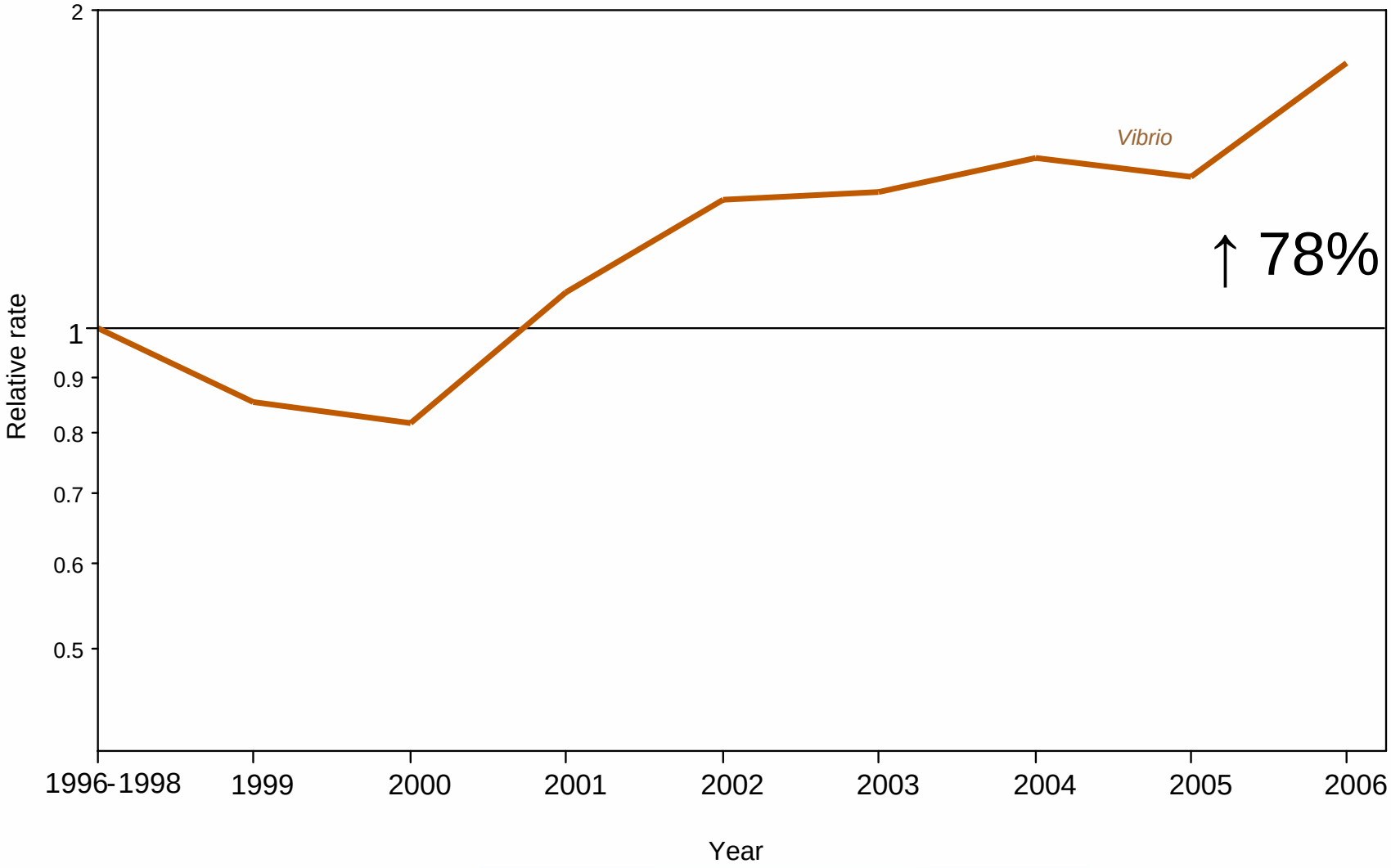
Relative rates compared with 1996—1998 baseline period of laboratory-diagnosed cases of infection with *Listeria*, by year



Trend in *Listeria*

- Decline in *Listeria* infections in 2006 same as decline in 2005
- HP 2005 Objective: 2.5 cases/1,000,000 persons
  - **2006:** 3.1 cases/1,000,000 persons

Relative rates compared with 1996—1998 baseline period of laboratory-diagnosed cases of infection with *Vibrio*, by year



Trend in *Vibrio*

- Continued increase in *Vibrio* infections
- Additional efforts are understand trends in *Vibrio* infections
  - Examining national data (COVIS)
  - Linking FoodNet and COVIS data

Summary of FoodNet Trends

- Incidence of *Campylobacter* and *Listeria* has declined
- Little change in incidence of *E. coli* O157 and *Salmonella*
- *Vibrio* infections have increased
- Further measures are needed to prevent foodborne illness and meet Healthy People 2010 Objectives

FoodNet provides

- Stable surveillance for a variety of pathogens and syndromes
  - Report card on the food safety system of the U.S., used by public health, regulatory agencies and industry
- Critical data for updating overall burden estimates
- Platform for attributing burden to specific foods
- Mechanism for rapid institution of surveillance of new and emerging enteric pathogens

Thank you!

http://www.cdc.gov/foodnet

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HEALTH EDUCATION • EPIDEMIOLOGY • WORKPLACE HEALTH • IMMUNIZATION • WORKPLACE SAFETY • TRAINING • C

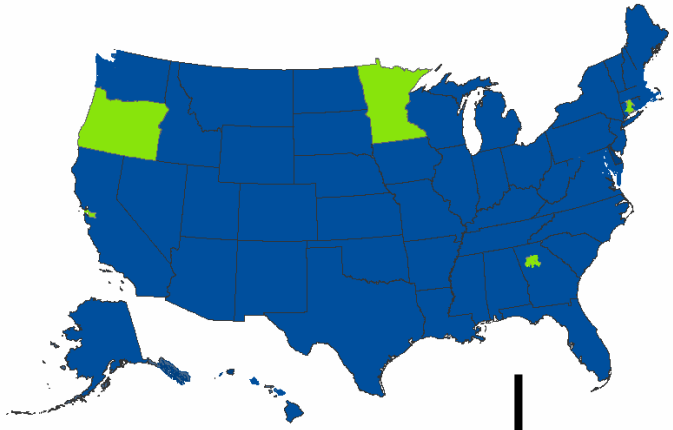
The *E. coli* O157 Story

- Coordinated efforts by regulators and industry have been effective in reducing contamination and illness related to ground beef
- Need to better understand other factors associated with *E. coli* O157 infection

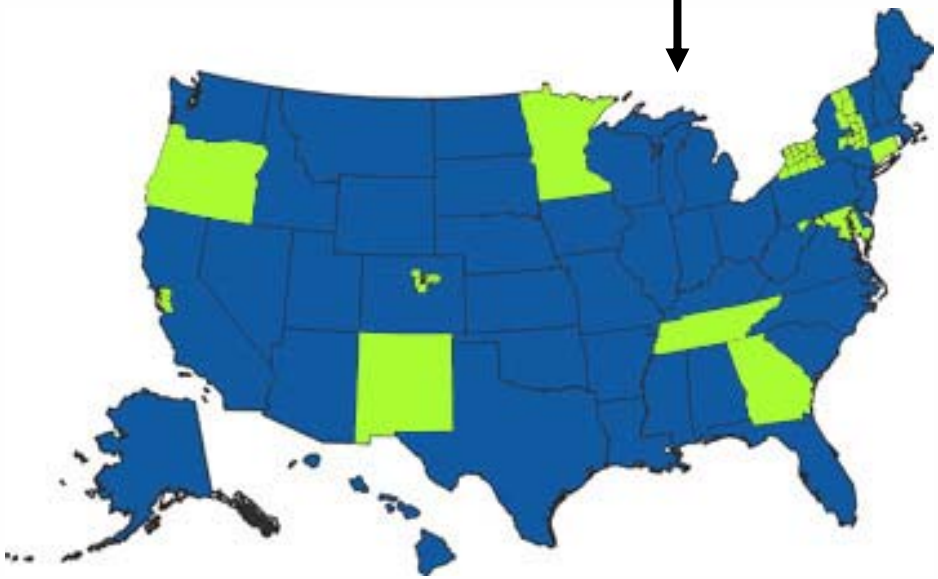
Burden of illness estimates

- Revising estimate overall burden of foodborne disease
- Plan to estimate
  - Cost and economic impact
  - Disability Adjusted Life Years (DALYs)

FoodNet Catchment Area



1996
5% of U.S. population



2006
15% of U.S. population

Year	Population (millions)
1996	14.3
1997	16.1
1998	20.7
1999	25.9
2000	30.5
2001	64.1
2002	38.0
2003	41.5
2004	44.1
2005	44.9
2006	44.9